REMARKS

Claims 1-12 are pending in the application. Claims 1-12 stand rejected. Claims 1 and 6-8 have been amended. In view of the amendments to the claims and the following remarks, Applicants respectfully request that the rejections be withdrawn and the claims be allowed.

The disclosure of the application stands objected to because of certain informalities. Specifically, the Examiner objects to material within paragraph [0031] of the disclosure. "The virtualizer module 1 220 is cited as storing write data into module 2 230's cache seemingly unnecessarily; and subsequently cited doing the same, however resulting in module 1 220 cache being expected to be containing the data." Office Action, p. 2. Applicants acknowledge the potential for confusion, but respectfully direct the Examiner to a more thorough reading of the paragraphs preceding paragraph [0031] to fully understand the example process described in paragraph [0031]. Paragraph [0031] has been amended to include clarifying language from paragraph [0029].

Paragraphs [0029] and [0030] of the disclosure explain the need for multiple virtualizer modules. When a first virtualizer module receives data, the first virtualizer not only stores the data in its own cache, but the first virtualizer also mirrors the data to a second virtualizer for redundancy purposes. "Virtualizer module 2 230 receives the write command from host 1 210. Virtualizer module 2 230 accepts the write data, stores it into its cache, and copies the data into the cache of virtualizer module 1 220 via virtualizer interconnect 250. Virtualizer module 1 220 acknowledges to virtualizer module 2 230 that the write data has been stored in cache. Virtualizer module 2 230 then acknowledges the write to host 1 210. At a later time, virtualizer module 2 230 forwards the write data with a write command to RAID controller 1 260. When the

data has been written, RAID controller 1 260 sends an acknowledgement back to virtualizer module 2 230." Application, ¶ [0029]. In other words, "virtualizer architecture with RAID 200 stores the command in its cache, mirrors the cache and acknowledges to the host that the command is complete without introducing latency from the RAID controller." Application, ¶ [0030].

In view of the explanation presented in paragraphs [0029] and [0030], paragraph [0031] has been amended to clarify that data received by a first virtualizer module is stored both in the cache of the first virtualizer module and in the cache of a second virtualizer module. No new matter has been added in this amendment. The objection to the specification is submitted to be overcome.

Claims 7 and 8 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The rejection is respectfully traversed.

Claim 7 stands rejected because of an alleged lack of "reason or utility to justify the elements 'copying said write data into the cache of a second virtualizer; forwarding the write data with a write command from said second virtualizer to said RAID controller' as claimed." Office Action, p. 2. Applicants respectfully assert that, as explained above, the specification contains sufficient disclosure to justify the claimed elements. Paragraphs [0029]-[0031] of the application demonstrate the need of having a second virtualizer to cache received data for redundancy purposes. In the explained embodiment of the invention, the virtualizers contain caches for storing and mirroring data that is to be written to a storage element via a RAID controller. By moving the tasks of storing and mirroring from the traditional RAID controller to a plurality of virtualizers, latency is reduced. Application, ¶ [0030]. RAID controllers no longer need to perform the tasks newly performed by the plurality of virtualizers.

Claim 7 has been amended to clarify the invention and to ensure consistency with the content disclosed in the specification.

Claim 8 stands rejected for reasons similar to those used to reject claim 7 above. However, as with claim 7, Applicants respectfully direct the Examiner to review paragraphs [0029]-[0031] of the application to recognize that each element recited by claim 8 is fully disclosed and explained in the specification.

Because claims 7 and 8 are supported by full disclosure in the specification, claims 7 and 8 are allowable. Applicants respectfully request the rejection be withdrawn.

Claims 1-8, 10 and 11 stand rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,421,711 to Blumenau et al. ("Blumenau"). The rejection is respectfully traversed.

Claim 1 recites a virtualizer that includes a task manager, a cache subsystem and a command mapper. The command mapper parses "data requests into at least one secondary data command to be sent to a downstream data storage element via a redundant array of inexpensive disks (RAID) controller." Blumenau fails to disclose at least this element of claim 1.

Blumenau relates to a RAID storage system that includes one or more RAID storage controllers. Blumenau, Fig. 1; col. 3, lines 33-65. The Blumenau RAID storage controllers perform functions similar to the functions performed by the RAID controllers described in the application. Blumenau, col. 3, lines 33-65; Application, ¶ [0006]. However, Blumenau fails to disclose the existence of a virtualizer in addition to the RAID storage controllers. As explained in the application, virtualizers are different

from RAID controllers in that virtualizers are configured to act as controllers for RAID controllers. Application, Figs. 2 and 3; ¶¶ [0028]-[0031]. Data commands from a host are evaluated by a virtualizer before being forwarded to a RAID controller. Application, ¶¶ [0028]-[0029]. Blumenau, however, only relates to RAID storage controllers. Because Blumenau fails to disclose a virtualizer that interconnects with RAID controllers, claim 1 is submitted to be allowable over Blumenau. Claims 2-5, which depend from claim 1, are also submitted to be allowable for at least the same reason.

Claims 6-8 and 10 recite methods of operating a virtualizer or a virtualizer architecture. Each of claims 6-8 and 10 recites a virtualizer sending data commands either to or through an interconnected RAID controller. As explained above, however, Blumenau fails to disclose a virtualizer interconnected to one or more RAID controllers. Blumenau only relates to RAID controllers. Blumenau, Figs. 1 and 2. Virtualizers are different from RAID controllers and help RAID controllers to operate more efficiently. Application, Figs. 2 and 3, ¶ [0006]. Because Blumenau fails to distinguish between virtualizers and RAID controllers, claims 6-8 and 10 are submitted to be allowable over Blumenau.

Claim 11 recites a virtualizer architecture that includes "a plurality of virtualizers" and "a plurality of redundantly paired redundant arrays of independent disk (RAID) controllers coupled to said plurality of virtualizers." As explained above, Blumenau fails to disclose both a plurality of virtualizers and a plurality of RAID controllers, as recited by claim 11. For at least this reason, Applicant submits that Blumenau fails to render claim 11 unpatentable.

Because Blumenau fails to disclose each element recited by claims 1-8, 10 and 11, claims 1-8, 10 and 11 are submitted to be allowable over Blumenau. Applicants respectfully request the rejection be withdrawn.

Claims 9 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Blumenau in view of U.S. Patent No. 6,128,623 to Mattis et al. ("Mattis"). The rejection is respectfully traversed.

Claim 9 depends from claim 8. Claim 12 depends from claim 11. As explained above, Blumenau fails to teach or suggest each element of the claims upon which claims 9 and 12 depend. Specifically, Blumenau fails to distinguish between virtualizers and RAID controllers. Mattis, which teaches a high-efficiency cache system, also fails to teach or suggest the necessity of both virtualizers and RAID controllers in a RAID system. Mattis is relied upon only to teach a more efficient method of reading and writing data in a cache system. Mattis, col. 17, lines 23-30; col. 15, lines 55-67; col. 16, lines 1-32. In other words, Mattis fails to remedy the shortcomings of Blumenau. Because neither Blumenau nor Mattis, individually or combined, teach or suggest a distinction between virtualizers and RAID controllers, claims 9 and 12 are submitted to be allowable over the combination of Blumenau and Mattis. Applicants respectfully request the rejection be withdrawn.

In view of the above amendment, Applicants respectfully submit that the pending application is in condition for allowance.

Dated: February 21, 2006

Respectfully submitted,

By _____

Stephen A. Soffen
Registration No.: 31,063
DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP
2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorney for Applicant